Science and Religion

Dr Kristian Camilleri
School of Historical and Philosophical Studies
University of Melbourne

VCE Religion and Society Conference
20 February 2017

Victorian Certificate of Education

RELIGION AND SOCIETY

STUDY DESIGN

Unit 1: The role of religion in society

In this unit students explore the origins of religion and its role in the development of society, identifying the nature and purpose of religion over time. They investigate the contribution of religion generally to the development of human society. They also focus on the role of religious traditions over time in shaping personal and group identity. Students examine how individuals, groups and new ideas have affected and continue to affect religious traditions. The unit provides an opportunity for students to understand the often complex relationships that exist between individuals, groups, new ideas and religious traditions broadly and in the Australian society in which they live.

A range of examples are studied throughout the unit. For all areas of study, students explore detailed examples from more than one religion. These may be from one or more than one of the groups below. In addition, for Areas of Study 1 and 2 further shorter illustrative examples should be selected for study from across all the groups below.

- Spiritual and religious ideas in Prehistory (associated with, for example, Lascaux, Gobekli Tepe, Stonehenge, Jericho)
- Religious traditions of ancient civilisations (for example, Sumerian, Mesopotamian, Babylonian, Egyptian, Canaanite, Roman, Greek)
- Asian religious and philosophical traditions (for example, Buddhism, Hinduism, Sikhism, Jainism, Taoism, Confucianism, Shintoism)
- Abrahamic religions (for example, Judaism, Christianity and Islam).

Students consider the aspects of religion on page 9 when investigating selected religious traditions and religion in general.

Unit 4: Religion, challenge and change

r time of religious traditions and the societies of which they are a part.
n has been a truth narrative, offering a means for finding answers to the
are in a dynamic process of engagement and negotiation with members
th other key institutions in wider society associated with power, authority
ng institutions that participate in and contribute to wider societies – both
nd support society, acting as levers for change themselves and embracing
ety.

tate of development as members apply their talents and faith to extend the
efs, of their expression and of the application to their lives. In the interaction
e also opportunities for development from significant challenges including
hip, and of people and groups within wider society. These challenges and
oader contexts such as changing economic, political and social conditions.

es a response from society and/or religious traditions. Religious traditions
they take a stance of indifference. Consequently, actions are implemented
igious tradition. These actions may resist or embrace change and affect
itself. A key aim beyond resolution of the challenge itself is for the religious
d, ultimately, identity. However, the interaction between religious traditions
aims and there may be a series of interactions as a challenge is negotiated.

e for religious traditions generally over time and then undertake a study
re than one religious tradition or denomination. Religious tradition/s or
one or more than one of the following: Buddhism, Christianity, Hinduism,

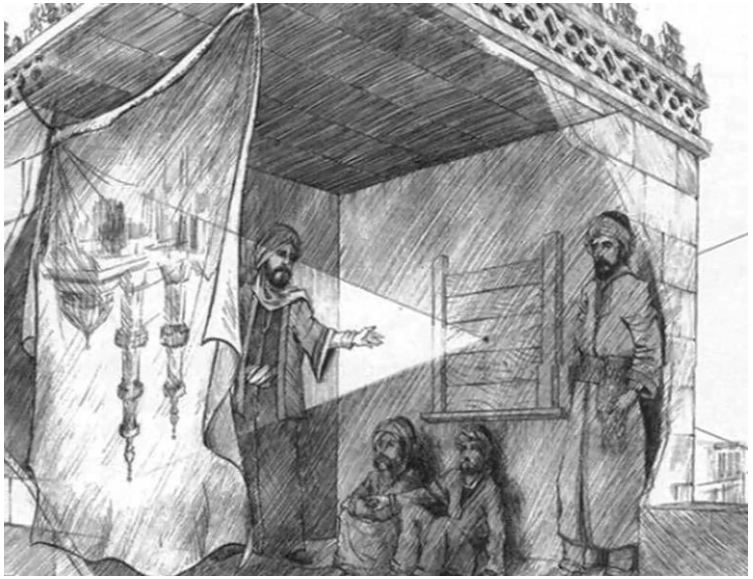
e 9 in their investigation of selected religious tradition/s or denomination/s

Science and Religion?

- A complex relationship
- Far more to it than simple conflict thesis
- Relationship at any given time must be placed in its historical context
- This can be illustrated by considering the 'Scientific Revolution' of the 17th century:
  - General themes
  - Galileo affair – exemplary case of supposedly conflictual relationship

Science and Religion?

- What do we mean by science?
  - Flourished in ancient Greece (3rd C BC); medieval Islam (9-11th C)
  - A form of knowledge about the natural world?
  - A set of methods or practices?
  - A vocation, profession or a culture?



- What do we mean by religion?
  - Beliefs (e.g. in God)
  - Institutions
  - Practices
  - Sacred texts

The Conflict Thesis

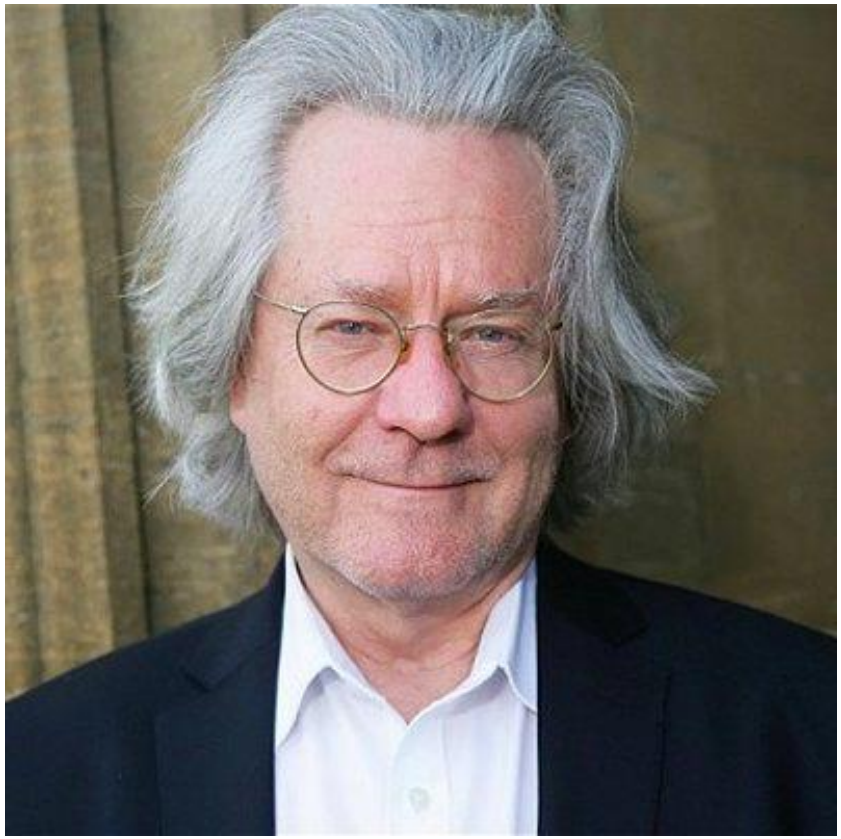
A preordained conflict between opposing forces:

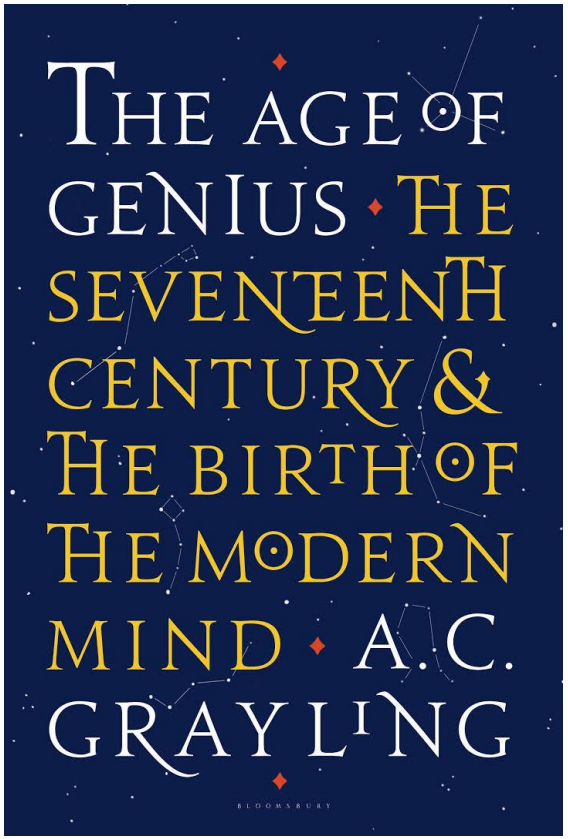
- John W. Draper, *History of the Conflict of Science and Religion* (1875)
- Andrew D. White, *A History of Warfare of Science with Theology in Christendom* (1896)

These interpretations rest on the image *the heroic scientific individual taking on the authoritarian religious establishment*.

Religion is major impediment to the progress of science

The Birth of Modern Science



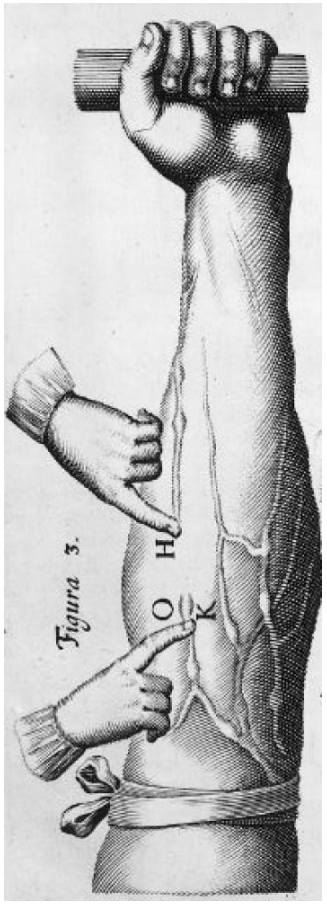


What was the "Scientific Revolution"?

- An intellectual shift from the medieval to the modern mind
- The Christian Medieval Worldview (1100-1500)
  - Based largely on the Greek philosopher Aristotle (3rd C BC)
  - Combined with Christianity in the 12th C → 'medieval scholasticism'
  - An earth-centred universe (Ptolemaic astronomy)
  - A veneration for knowledge of the ancients
- In the 16th and 17th centuries (1500-1700) a new attitude took hold in Western Europe –often referred to the 'Scientific Revolution'

The Rise of Modern Science 1500-1700

- New discoveries:
  - Lunar craters (1610)
  - The circulation of the blood (1628)
  - The law of inertia (1644)
- The ‘Copernican Revolution’ (1542-1687)
- Shift to a mechanical worldview
- The rise of experiment



The Rise of Modern Science 1500-1700

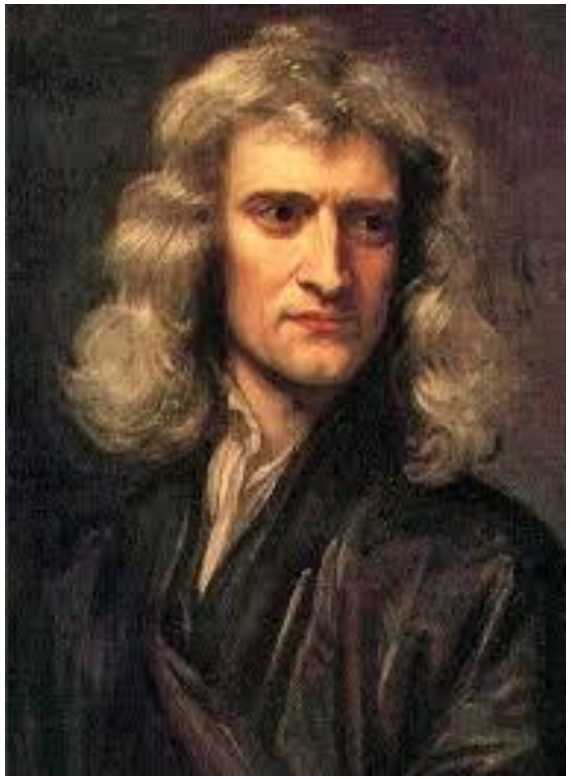
- The emergence of Jesuit Colleges
- Emergence of the first scientific societies (1660s)
- New scientific instruments
  - The telescope
  - The microscope
  - The air pump
- Challenge to ancient authority

European Scientific Culture

What Role for Religion?

Religious impulses were present in the major scientific thinkers of the 17th C

- Johan Kepler
- Galileo Galilei
- Marin Mersenne
- Pierre Gassendi
- René Descartes
- Christiaan Huygens
- Isaac Newton
- Robert Boyle



The Impact of Protestantism?

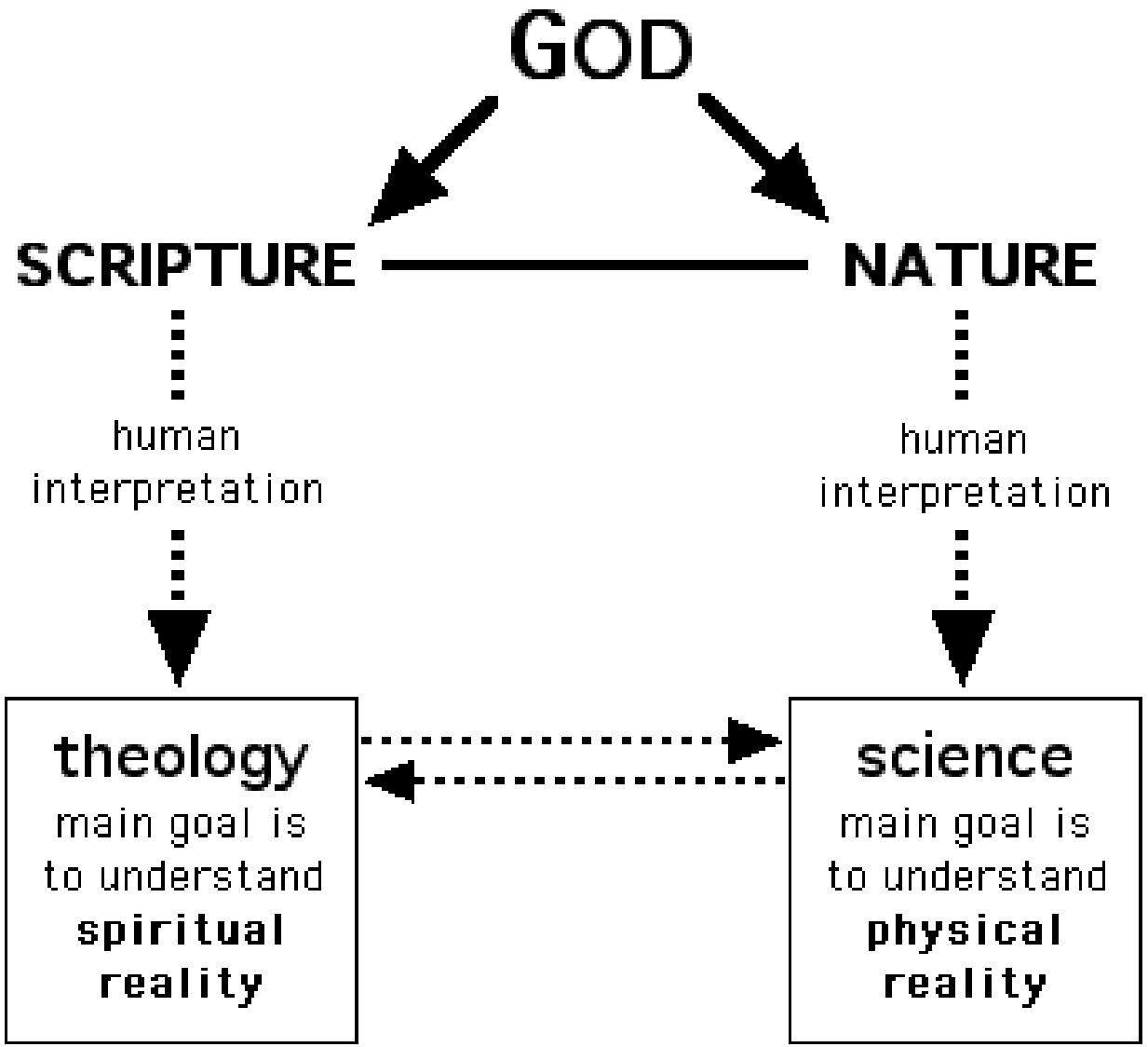
- Scholars have argued that the Protestant Reformation and Counter-Reformation in Europe in the 16th C played a crucial role in the rise of modern science
  - Robert K. Merton
  - Peter Harrison

- A range of new theological attitudes emerged in the 17th C regarding God's relationship to creation and human reason.

- Different theological understandings of nature and the human mind were intimately connected with the emergence of new attitudes to inquiry.

The Two Books

- “The Two Books”: Book of Nature and Book of Scripture
- The ‘Book of Nature’ was a source of God's revelation to mankind
- When read alongside sacred scripture, the ‘book of nature’ and the study of God's creations would lead to a knowledge of God himself


GOD
SCRIPTURE
NATURE
human interpretation
human interpretation
theology
main goal is to understand spiritual reality
science
main goal is to understand physical reality

Johannes Kepler (1571-1630)

- German astronomer, mathematician – one of the heroes of the Scientific Revolution
- Known for his three laws of planetary motion
- Defender of the Copernican system – a controversial view
- Abandoned uniform circular motion in favour of elliptical orbits
- Sought physical causes of planetary motion

Kepler's Thought

- Mathematical, empirical, metaphysical and theological aspects were deeply interwoven in Kepler's thought.

- His most significant works:
  - *The Cosmographical Mystery* (1596)
  - *The New Astronomy* (1609)
  - *The Harmony of the World* (1619)

- Kepler also studied theology extensively at Tubingen.

- He was adept at textual analysis and biblical exegesis, as evidenced in his lengthy defense of Copernicanism in the *New Astronomy*.

Kepler and the Book of Nature

- "The very book of Nature in which God the Creator has proclaimed and depicted his essence and his will toward man in part and in a certain wordless kind of writing.".

  Epitome of Copernican astronomy (1621)

- The pursuit of science is a kind of sacred vocation for Kepler. He referred to "*the divine inner voice that calls humans to learn astronomy*". Nature is "to be celebrated, venerated and admired in true worship."

- "*I am of the opinion that … astronomers are priests of Almighty God with respect to the Book of nature.*"

  Kepler to Hewart von Hohenburg, 1598.

Science and Religion; Part of the Same Enterprise

- Kepler believed he was uncovering God's providential plan, which governed the structure and regularity of the cosmos.
- For Kepler, geometry was the key to understanding the cosmos – it was coeternal with the divine mind, and comprehensible to the human mind.
- The idea of a providential plan and divine laws was an essential step in preparing the way for the secular concept of the law of nature.

The Galileo Affair 1615-1633

Trial of Galileo in 1633

Backdrop to the Galileo Affair

- 1543 - Copernicus publishes *On the Revolutions of the Heavenly Bodies*
- 1610 - Galileo's publication of the *Starry Messenger*
- 1615 – Galileo's letter to the Grand Duchess Christina
- 1616 - Decree of the Holy Office condemning the Copernican view
- 1616 - Galileo ordered *"to abandon this doctrine, not to teach it to others, not to defend it, and not to treat of it; and that if you did not acquiesce in this injunction, you should be imprisoned"*.

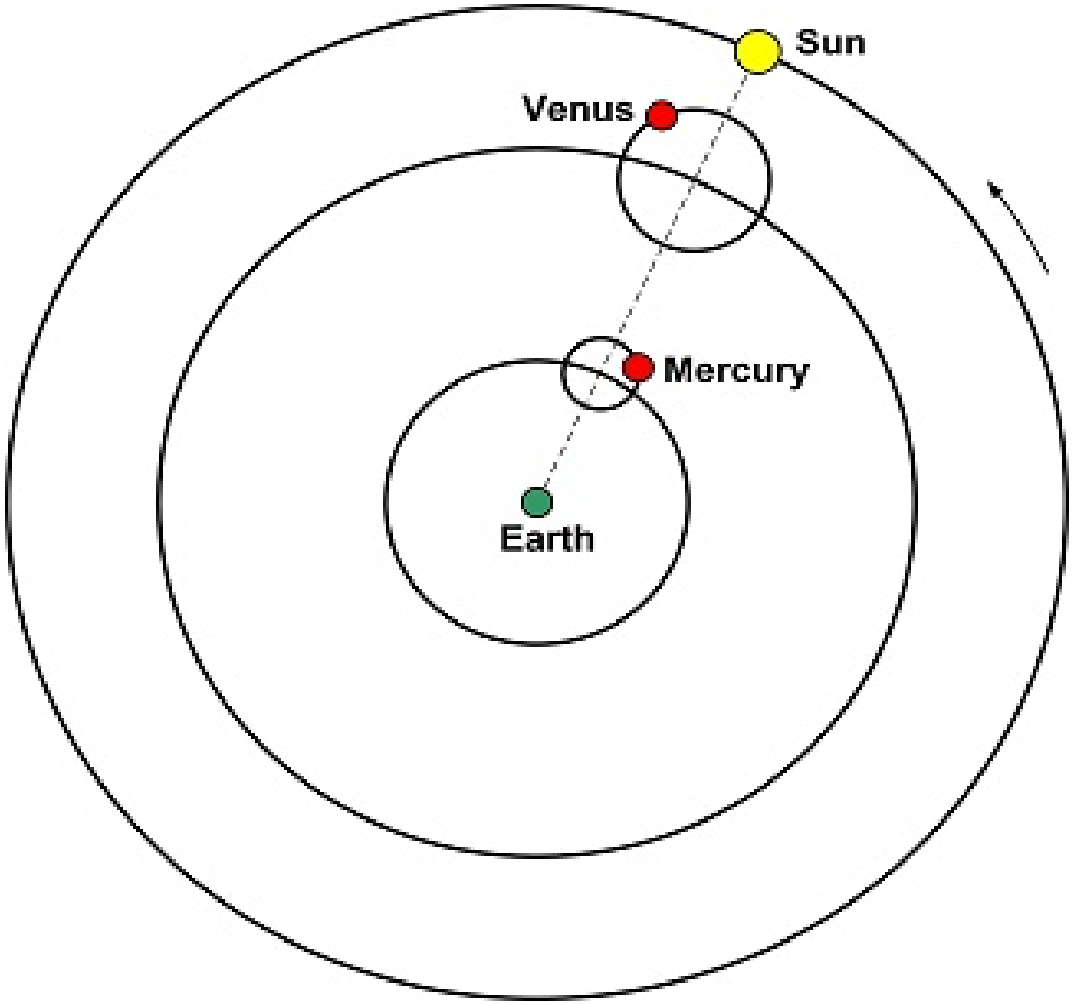
The Trial of Galileo

- 1632 - Galileo's publication of the *Dialogue on the Two Chief World Systems*
- 1633 - Galileo ordered to stand trial on *vehement suspicion of heresy "for holding as true the false doctrine taught by some that the sun is the center of the world".*
- Galileo is found guilty and sentenced to house arrest

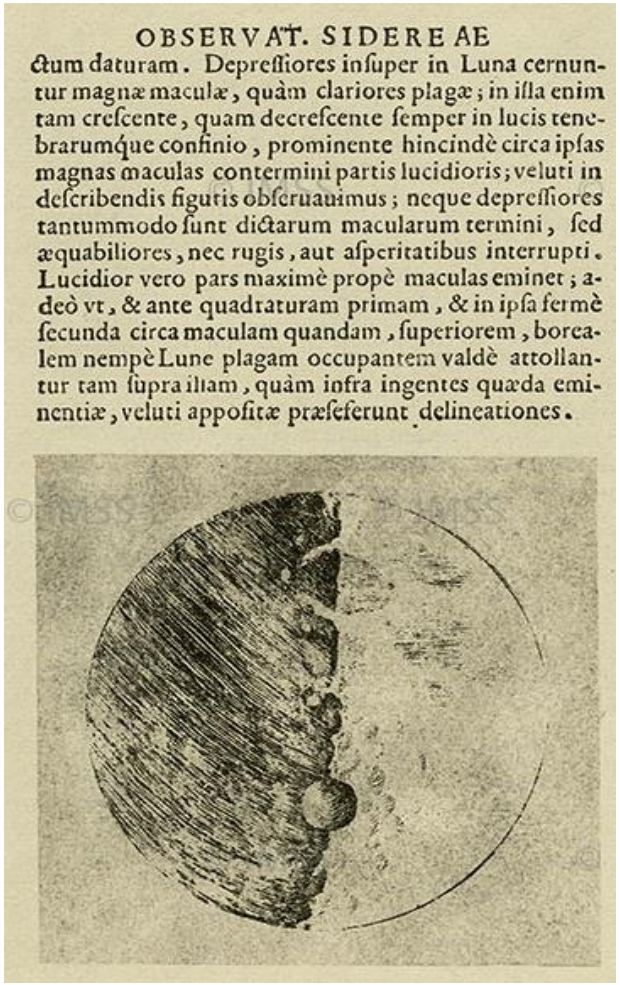
What was the Galileo Affair About?

- The scientific case for Copernicanism
  - Did Galileo have compelling scientific arguments?
  - What counts as 'knowledge' or 'demonstration' in science?
- The interpretation of scripture
  - Apparent discord between Copernicanism and a literal interpretation of the Bible
  - Who had the authority to interpret Scripture?
- The socio-political context
  - Italian court culture
  - Volatile political and religious context

The Geocentric Model



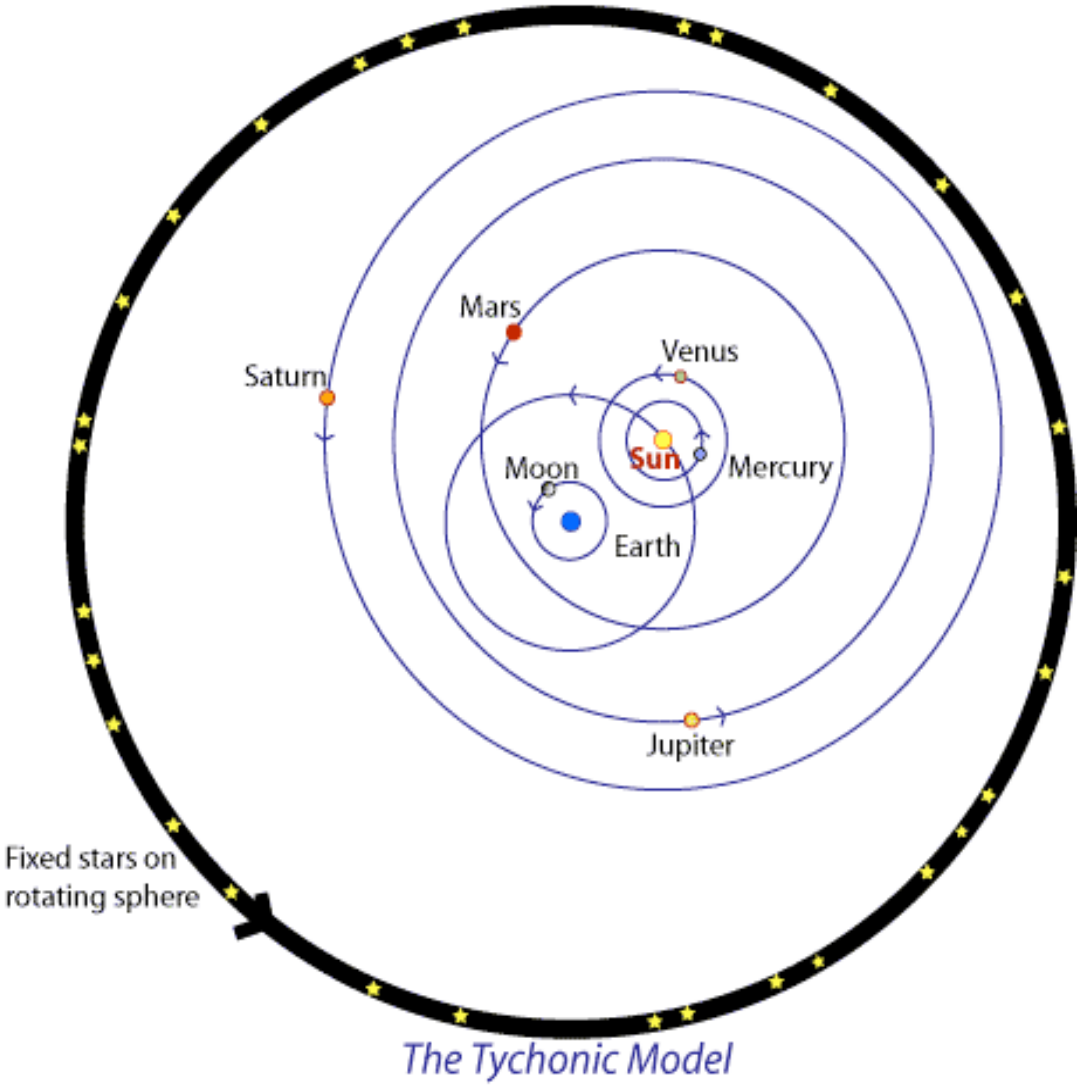
Copernicus vs Ptolemy


OBSERVAT. SIDEREAE

ctum daturam. Depreſſiores inſuper in Luna cernuntur magnæ maculæ, quàm clariores plagæ; in illa enim tam creſcente, quam decreſcente ſemper in lucis tenebrarumque confinio, prominente hincindè circa ipſas magnas maculas contermini partis lucidioris; veluti in deſcribendis figuris obſeruauimus; neque depreſſiores tantummodo ſunt dictarum macularum termini, ſed æquabiliores, nec rugis, aut aſperitatibus interrupti. Lucidior vero pars maximè propè maculas eminet; adeò vt, & ante quadraturam primam, & in ipſa fermè ſecunda circa maculam quandam, ſuperiorem, borealem nempè Lune plagam occupantem valdè attollantur tam ſupra illam, quàm infra ingentes quædam eminentiæ, veluti appoſitæ præſeferunt delineationes.

- The Copernican system was not more empirically accurate
- Galileo's telescopic observations challenged existing cosmology
- But they did not constitute *proof* for heliocentrism
- Both systems used uniform circular motion (not ellipses)
- Both used fictitious ‘epicycles’

Two Chief World Systems?



The Tychonic Model

- Why not three chief world systems?
- By 1630 many Jesuits favoured the Tychonic system
- Galileo's argument from the tides was seriously flawed.

The Interpretation of Scripture

- A few Protestant and Catholic thinkers argued the Copernican hypothesis did not contradict the Holy scriptures", *if read correctly*
  - Johannes Kepler, *The New Astronomy* (1609)
  - Galileo Galilei, *Letter to the Grand Duchess Christina* (1615)
  - Paulo Foscarini, *Letter on the Opinion of Copernicus* (1616)
  - Philipp Lansbergen, *Considerations of the Diurnal Motion of the Earth* (1629)
  - Jacob Lansbergen, *Apologia* (1633).
- In order to interpret the meaning of the text, whether literal, allegorical or other, it was crucial to understand the intention of the biblical authors.
- This meant understanding that biblical authors had accommodated their language

Catholic Interpretation of Scripture

- For Catholics, the Church, although not itself a source of Divine Revelation, has a God-given mission to interpret and teach both Scripture and Tradition.

  ". . . the Council decrees that, in matters of faith and morals pertaining to the edification of the Christian doctrine, no one, relying on his own judgment and distorting the Sacred Scriptures to his own conceptions, shall dare to interpret them contrary to that sense which Holy Mother Church. . . has held and does hold, or even contrary to the unanimous agreement of the Fathers. . ."

  Decrees of the Council of Trent, Session IV, 8th April 1546. 3b

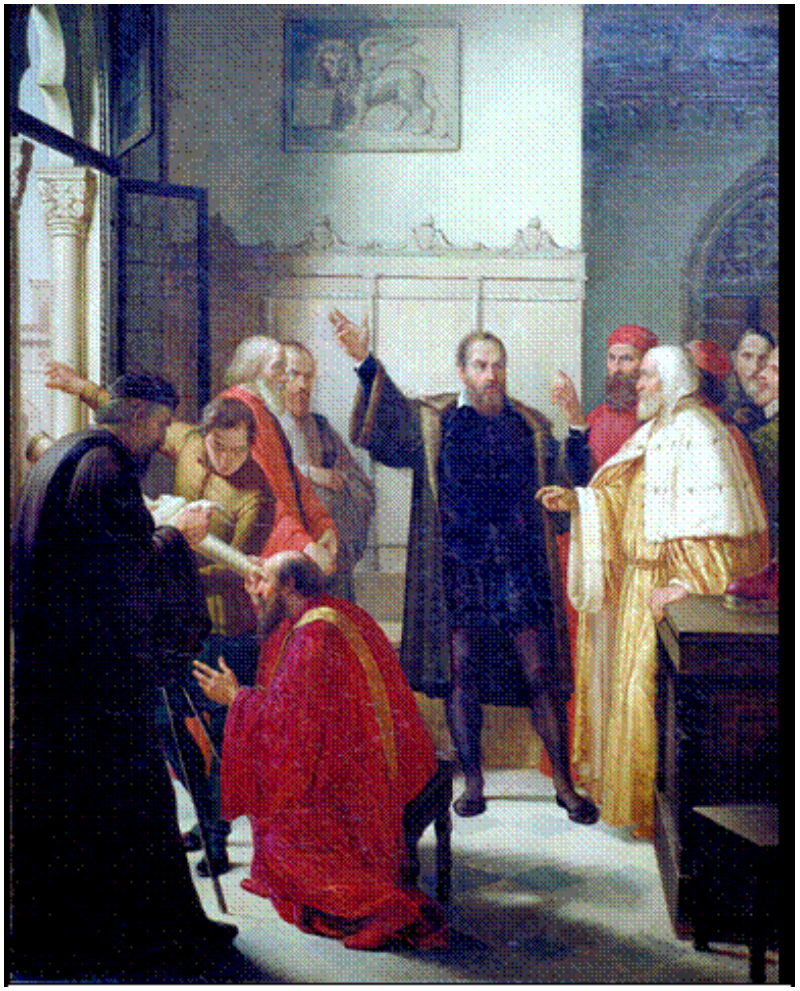
Galileo's View

- God is the author of two books, the book of Nature and the Scriptures.
- The Bible has to do with faith and morals:
  "The bible tells us how to go to heaven, not how the heavens go"
- The 'two books' have one author and so cannot be in conflict provided each is interpreted correctly.
- If there is an apparent contradiction between the Bible and natural science, we should accept the science and give Scripture a theological and ethical interpretation.

The Cultural Context

- In 1610 Galileo became court mathematician and philosopher to the Duke Cosimo II de Medici
- A unique and socio-professional identity: client-patron relationship
- On behalf of the court he engaged in controversial intellectual debates
- This helps to explain why Galileo pursued the Copernican case with such zeal.

Galileo at Court



The Thirty Years War (1618-1648)

The Political Context

- The war of religion developed into a conflict involving most of the great European powers. The war became less religious and more political.
- By 1630 Catholicism was on the verge of becoming extinct in Germany.
- Pope Urban VIII, elected with support of French Cardinals, was accused of sympathizing with France, which opposed the Empire in the war.
- The Spanish ambassador, Cardinal Borgia, threatened to impeach the Pope in 1632.
- For a Catholic Church under siege, the Galileo affair presented the Pope with a critical show of strength.

Conclusions from the Galileo Affair

- What appear to be conflicts between science and religion are often conflicts over power and authority.
- The Galileo affair was immensely complex
- It was not simply a conflict between science and faith, rationality and irrationality, nor simply a matter of the suppression of intellectual freedom.
- It was, at least in part, a power struggle – shaped by 17th C baroque court culture – in the midst of a political crisis then confronting the Catholic Church.
- Conflicts between science and religion are often between rival scientific interests, or conversely between rival religious factions – and politics is never far from the surface.

References

- John Hedley Brooke (ed.), *Science and Religion: Some Historical Perspectives*, Cambridge University Press, 1991.
- Thomas Dixon, Geoffrey Cantor, Thomas Pumfrey (eds), *Science and Religion: New Historical Perspectives,* Cambridge University Press, 2010.
- Gary Ferngren (ed.), *Science and Religion: A Historical Introduction*, Johns Hopkins, 2002.
- Garry Ferngren, Edward John Larson, Darrel W. Amundsen (eds), *Science and Religion in the Western Tradition: An Encyclopedia*, Garland Publishing, 2000.
- Peter Harrison (ed.), *Cambridge Companion to Science and Religion*, Cambridge University Press, 2010.
- Mikael Stenmark, 'Religion and Science', *Routledge Companion to Philosophy of Religion*, Routledge, 2012, pp. 775-784.